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United States Department of Agriculture,
DIVISION OF STATISTICS.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE STATISTICIAN,
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SIR: I have the honor to transmit herewith a report on the cereal crops of European Russia for the year 1900, prepared by Mr. E. T. Peters, of this Division, and to recommend its publication as Circular No. 14, Division of Statistics.

Respectfully,

JOHN HYDE,
Statistician.

Hon. JAMES WILSON,
Secretary of Agriculture.

ESTIMATES OF RUSSIAN CROPS.

PRELIMINARY ESTIMATES FOR EUROPEAN RUSSIA.

The provisional estimate of the Russian Ministry of Agriculture for the principal cereal crops of European Russia for 1900 was published in a recent number of the Crop Reporter. There can now be added a provisional estimate by the Central Statistical Committee for the same grand division of the Empire, which comprises all but eight of the seventy-two provinces usually covered by the final official reports (*a*). The figures of both estimates are presented in the following table, along with those of the Central Statistical Committee for 1899.

Estimated crops of European Russia.

CROPS.	PRELIMINARY ESTIMATES FOR 1900.		Final estimate of Central Statistical Committee for 1899.
	Estimate of Central Statistical Committee.	Estimate of Ministry of Agriculture.	
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat	396, 532, 472	324, 842, 343	393, 733, 616
Rye	903, 931, 110	833, 103, 039	880, 447, 589
Barley	232, 833, 000	215, 291, 247	218, 083, 512
Oats	814, 298, 726	779, 156, 761	908, 648, 399
Maize	34, 366, 348	<i>b</i>	30, 905, 975
Buckwheat	41, 031, 949	<i>b</i>	52, 109, 677
Millet	67, 773, 386	54, 761, 716	83, 868, 632
Peas	26, 223, 071	<i>b</i>	26, 586, 847
Potatoes	941, 939, 812	<i>b</i>	887, 053, 052

b No estimate.

(*a*) The estimate of the Ministry of Agriculture omits the small province, or territory, of Chernomorsk, of which the crops of 1899 were reported by the Central Statistical Committee as follows: Wheat, 184,900 poods, or 111,287 bushels of 60 pounds; rye, 19,300 poods, or 12,446 bushels of 56 pounds; barley, 4,900 poods, or 3,687 bushels of 48 pounds; oats, 9,200 poods, or 10,382 bushels of 32 pounds; millet, 5,100 poods, or 3,289 bushels of 56 pounds. In the case of spring wheat, the estimate of the Ministry of Agriculture contains no figures for Poland, in which division that crop is but little cultivated. The Polish spring wheat crop of 1899 was reported by the Central Statistical Committee at 339,600 poods, or 204,398 bushels of 60 pounds.



EXPLANATION OF MAP.

The shaded portion represents the Chernoziom, "black soil" or "black earth" portion of Russia proper, which comprises roughly twenty-six of the fifty provinces of that grand division of the Empire, and in which are grown about seven-tenths of the cereal products of that grand division.

To economize space, the provinces comprised in the regions designated on the map are shown by numbers. The names of the provinces corresponding to these numbers are given below:

Central Agricultural region: 1, Orel; 2, Tula; 3, Riazan; 4, Tambof; 5, Kursk; 6, Voronezh.

Middle Volga region: 1, Nizhni Novgorod; 2, Kazan; 3, Penza; 4, Simbirsk; 5, Saratof.

Lower Volga region: 1, Astrakhan; 2, Samara; 3, Orenburg.

New Russia: 1, Bessarabia; 2, Kherson; 3, Taurida; 4, Ekaterinoslav; 5, Don Territory.

Southwest region: 1, Volhynia; 2, Podolia; 3, Kief.

Little Russia: 1, Chernigof; 2, Poltava; 3, Kharkof.

Moscow Manufacturing region: 1, Tver; 2, Yaroslaf; 3, Kostroma; 4, Kaluga; 5, Moscow; 6, Vladimir.

White Russia: 1, Vitebsk; 2, Minsk; 3, Moghilef; 4, Smolensk.

Ural region: 1, Viatka; 2, Perm; 3, Ufa.

Extreme Northern region: 1, Archangelsk; 2, Vologda.

Lake region: 1, Olonets; 2, St. Petersburg; 3, Novgorod; 4, Pskof.

Lithuania: 1, Kovno; 2, Vilna; 3, Grodno.

Baltic region: 1, Esthonia; 2, Livonia; 3, Courland.

Vistula region (Russian Poland): 1, Kalisz; 2, Warsaw; 3, Plock; 4, Lomza; 5, Suwalki; 6, Piotrkow; 7, Siedlce; 8, Kielce; 9, Radom; 10, Lublin.

Northern Caucasus: 1, Kuban; 2 Stavropol; 3, Chernomorsk; 4, Terek.

It will be noticed that every estimate of the Ministry of Agriculture is considerably lower than the estimate of the Central Statistical Committee for the corresponding crop; and this remains true after making full allowance for the slight difference, pointed out in the first foot note, between the fields covered by the two estimates for 1900.

The estimates of the Central Statistical Committee for 1900 compared with its own estimates for 1899, show increase in case of wheat, rye, barley, maize, and potatoes, and decrease in the case of oats, buckwheat, millet, and peas.

Expressed by weight, the cereal crops of 1900, as estimated by the Central Statistical Committee, amounted to 3,363,431,100 poods (60,731,323 tons of 2,000 pounds). This estimate includes peas, which are classified with the cereals in the Russian reports, and, in addition to the cereals mentioned in the foregoing table, it includes spelt, for which an estimate of 15,348,300 poods (277,134 tons of 2,000 pounds) is set down, leaving 3,348,082,800 poods (60,454,188 tons of 2,000 pounds) for the other cereals with peas included. The cereal crops, with peas included, amounted in 1899 to 3,423,873,400 poods (61,822,691 tons of 2,000 pounds), including spelt to the amount of 17,935,200 poods (323,844 tons of 2,000 pounds). It thus appears that, notwithstanding the increase over the crops of 1899 in the case of wheat, rye, barley, and maize, this is outweighed by the decrease in oats, buckwheat, millet, spelt, and peas; so that the total estimated quantity of cereals, including peas, is less than that of 1899 by 60,442,300 poods (1,091,368 tons of 2,000 pounds). The largest deficiency is in oats, of which the estimated crop falls short of that of 1899 by 83,604,600 poods (1,509,595 tons of 2,000 pounds).

THE WINTER GRAIN AND HAY CROPS.

For the winter grain and hay crops the Central Statistical Committee has issued a detailed estimate for all that part of the Empire usually covered by its reports, namely, for the 64 provinces of European Russia (including northern Caucasus) and 8 provinces of Russia in Asia. This is found in a recent number of the *Messenger of Finance, Industry, and Commerce*, a weekly official paper published in St. Petersburg by the Ministry of Finance. The official figures, reduced to their equivalents in the denominations of the United States, are given in the following table, in which the estimate for 1900 is presented side by side with that for 1899 and, in the case of production of wheat and rye, with the average production of those grains for the five years—1895–1899.

Crops of winter grain and hay.

DIVISIONS.	WINTER WHEAT.				
	AREA.		PRODUCTION.		
	1900.	1899.	1900.	1899.	Annual average 1895-1899.
	<i>Acres.</i>	<i>Acres.</i>	<i>Bush. of 60 lbs.</i>	<i>Bush. of 60 lbs.</i>	<i>Bush. of 60 lbs.</i>
Russia proper (50 provinces)	7,721,733	7,374,404	75,360,506	98,519,051	85,079,763
Poland (10 provinces)	1,304,387	1,292,889	19,526,810	21,340,090	19,412,633
N. Caucasus (4 provinces)	4,369,724	4,118,384	39,980,753	42,855,145	37,163,480
Total in European Russia <i>a</i>	13,395,844	12,785,677	134,868,069	162,714,286	141,655,876
Siberia (4 provinces)	5,888	8,288	33,946	126,936	112,852
Central Asia (4 provinces)	8,134	7,378	96,240	119,052	113,936
Total in Asiatic Russia <i>b</i>	14,022	15,666	130,186	245,988	226,788
Grand total (72 provinces)	13,409,866	12,801,343	134,998,255	162,960,274	141,882,664

DIVISIONS.	WINTER RYE.				
	AREA.		PRODUCTION.		
	1900.	1899.	1900.	1899.	Annual average 1895-1899.
	<i>Acres.</i>	<i>Acres.</i>	<i>Bush. of 56 lbs.</i>	<i>Bush. of 56 lbs.</i>	<i>Bush. of 56 lbs.</i>
Russia proper (50 provinces)	65,168,026	62,815,737	824,228,725	800,509,503	680,369,578
Poland (10 provinces)	4,872,384	4,761,377	67,081,441	67,011,602	61,523,336
N. Caucasus (4 provinces)	629,162	606,377	7,419,358	7,505,964	6,448,442
Total in European Russia <i>a</i>	70,669,572	68,183,491	898,729,524	875,027,069	748,346,356
Siberia (4 provinces)	1,099,480	1,270,120	8,724,059	17,076,545	14,414,134
Central Asia (4 provinces)	20,121	20,839	86,090	208,809	302,390
Total in Asiatic Russia <i>b</i>	1,119,601	1,290,959	8,810,149	17,285,354	14,716,514
Grand total (72 provinces)	71,789,173	69,474,450	907,539,673	892,312,423	763,062,870

DIVISIONS.	HAY.			
	AREA.		PRODUCTION.	
	1900.	1899.	1900.	1899.
	<i>Acres.</i>	<i>Acres.</i>	<i>Tons of 2,000 lbs.</i>	<i>Tons of 2,000 lbs.</i>
Russia proper (50 provinces)	69,794,950	70,278,010	41,717,140	36,729,753
Poland (10 provinces)	2,427,012	2,377,361	2,052,470	2,190,170
N. Caucasus (4 provinces)	6,685,588	6,407,514	4,363,146	4,118,052
Total in European Russia <i>a</i>	78,907,550	79,062,885	48,132,756	43,037,975
Siberia (4 provinces)	9,079,242	10,041,596	4,656,103	8,447,738
Central Asia (4 provinces)	2,512,533	3,298,332	1,367,778	2,845,661
Total in Asiatic Russia <i>b</i>	11,591,775	13,339,928	6,023,881	11,293,399
Grand total (72 provinces)	90,499,325	92,402,813	54,156,637	c 54,331,428

a Except Finland.*b* So far as estimates are made for that part of the Empire.*c* The slight discrepancy between this total and the true sum of the figures for the several divisions is due to a corresponding discrepancy in the official figures as expressed in thousands of poods.

While it has been seen from the first table that the wheat crop as a whole is estimated by the Central Statistical Committee to be a little larger than that of 1899, the crop of winter wheat, according to the same authority, is considerably smaller, the difference being about 28,000,000 bushels. Moreover, this reduction occurred in spite of an increase of about $4\frac{1}{4}$ per cent in the area. The crop is also nearly 7,000,000 bushels below the average for the five years—1895–1899.

The crop of winter rye, comprising within less than 1 per cent of the entire rye crop, was larger in European Russia than that of 1899, the excess being nearly 24,000,000 bushels, and in the same grand division of the Empire it exceeded the average for 1895–1899 by more than 150,000,000 bushels. In the few provinces of Asiatic Russia for which an estimate is given, the crop was extremely poor; but the grand total for the 72 provinces covered by the estimate—64 in European and 8 in Asiatic Russia—is more than 15,000,000 bushels in excess of the corresponding total for 1899 and nearly 144,500,000 bushels in excess of the average for 1895–1899. In European Russia there was an increase of nearly $3\frac{1}{2}$ per cent in the area under this crop; but the net increase for the 72 provinces was only about $3\frac{1}{3}$ per cent, the Asiatic provinces showing a decrease.

The hay crop of European Russia is estimated to have been nearly 12 per cent larger than that of 1899, notwithstanding a slight reduction in the area; but the crop in the Asiatic provinces was so poor that the grand total for the 72 provinces is slightly below the corresponding total for 1899.

CEREAL PRODUCTION BY REGIONS.

In connection with the map of European Russia which accompanies this article, a statement of the production of cereals in the several divisions, or regions, thereon shown by name, will be of interest; and as their average production for a series of years is a better indication of their comparative agricultural importance than their production for a single year, a table will now be given, showing their production for the latest five-year period (1894–1898), for which an estimate of the Central Statistical Committee has been received. The Committee combines in one table wheat, rye, barley, oats, spelt, maize, buckwheat, millet, and peas, giving their aggregate production by weight; and as the bushel varies in weight for the different grains, it is only by weight that a statement in which they are all grouped together can be satisfactorily made. Hence, in the following table, the Russian units of weight (thousands of poods) are reduced to their equivalents in tons of 2,000 pounds.

Average annual production of cereals, including peas, in European Russia for the five years 1894-98.

DIVISIONS.	TONS OF 2,000 POUNDS.		
	Winter cereals.	Spring cereals.	Total cereals.
<i>Black Earth zone.</i>			
Central Agricultural region	4,326,439	3,327,332	7,653,771
Middle Volga region	3,064,197	2,126,230	5,190,427
Lower Volga region	655,668	1,935,756	2,591,424
New Russia	2,091,697	7,020,650	9,112,347
Southwest region	2,449,390	2,084,962	4,534,353
Little Russia	1,585,105	2,293,326	3,878,430
In Ural region (Ufa)	459,309	488,016	947,325
Total in Black Earth zone	14,631,805	19,276,272	33,908,077
<i>Regions other than Black Earth.</i>			
Moscow Manufacturing region	1,659,134	1,259,243	2,918,377
White Russia	1,269,140	1,135,315	2,404,455
Ural region (less Ufa)	1,767,779	2,234,399	4,002,178
Extreme Northern region	214,845	292,461	507,306
Lake region	600,504	592,207	1,192,711
Lithuania	968,785	721,700	1,690,485
Baltic region	528,445	784,630	1,313,075
Vistula region (Poland)	2,193,086	1,427,090	3,620,176
N. Caucasus	1,303,467	1,485,506	2,788,973
Total in regions other than Black Earth	10,505,185	9,932,551	20,437,736
Grand total	25,136,990	29,208,823	54,345,813

In grouping the various regions according to their situation in or outside of the Black Earth zone, a statement recently made by the Russian Ministry of Agriculture has been followed. It will, of course, be understood that the boundaries of the vast territory in which the black soil is found can not be supposed to coincide exactly with any regional or provincial boundaries; but the regions and provinces given by the Ministry of Agriculture as composing the Black Earth zone may be regarded as those in which the black soil is decidedly predominant. Including the province of Ufa, in the Ural region, and the six other regions named in the table, this zone, which corresponds to the shaded portion of the map, comprises twenty-six of the fifty provinces of Russia proper, leaving outside of its limits twenty-four provinces of that division, the ten provinces of the Vistula region (Russian Poland), and the four provinces of Northern Caucasus, or altogether thirty-eight of the sixty-four provinces of European Russia. An examination of the figures in the foregoing table will show that of the cereal production of the sixty-four provinces, about five-eighths are credited to the Black Earth zone, comprising over 58 per cent of the winter, and nearly 66 per cent of the spring cereals. Of the regions embraced in this zone, New Russia, comprising the provinces of Bessarabia, Kherson, Taurida, Ekaterinoslav, and the Don territory, shows the largest production, the Central Agricultural region, comprising a group of six provinces, standing next in order. The facilities for transportation

afforded by the Black and Caspian seas and the Sea of Azof, and by the navigable rivers flowing into them, combine with the fitness of the soil for agriculture to stimulate agricultural production in the Black Earth zone.

In addition to the regions whose production is given in the table, which correspond to those shown on the map, there are only two others for which the Central Statistical Committee issues estimates, both of these, namely, Siberia and Central Asia, which comprise eight provinces, being in Asiatic Russia. The average cereal production of Siberia for the five-year period, to which the table refers, is stated at 159,539,400 poods (2,880,701 tons of 2,000 pounds), and that of Central Asia, otherwise known as the "Region of the Steppes," at 38,183,800 poods (689,460 tons of 2,000 pounds). These two regions combined produced during the five years in question less than 6.2 per cent of the cereals grown in the seventy-two provinces covered by the official reports, leaving over 93.8 per cent of the grand total as the part produced in European Russia. When it is considered how much the map would have had to be enlarged or reduced in scale in order to make it cover Asiatic as well as European Russia, it will readily be seen that this was not worth while, in view of the comparative insignificance of the production of the Asiatic part of the Empire.

THE AGRICULTURAL SEASON OF 1900. •

In connection with the estimate of the Ministry of Agriculture given in the first of the foregoing tables, a review of the agricultural season of 1900, prepared in the same office and, like the estimate itself, based upon reports from over seven thousand agricultural correspondents, will be of interest. This review, of which a translation was kindly made by Mr. Hourwich, of the Bureau of the Mint, refers principally to the latter half of the summer of 1900. An abstract of the translation is given below, the dates being, however, changed from those of the Julian calendar, in use in Russia, to the corresponding ones of the Gregorian calendar, in use here.

Throughout the greater part of the Black Earth zone, as well as other parts of European Russia, drought, accompanied by constant winds and almost complete absence of dew, continued from the latter part of July until the latter part of August, while in many parts of New Russia, Little Russia, the Southwest region, and Poland it persisted until the early part of September. The surface soil was converted into ashes, and even the subsoil was deprived of its humidity, the ground becoming so hard as to be incapable of cultivation. Pasture fields were entirely burned out, many of the smaller streams were dried up, and in some localities even the wells were so nearly dry that there was a deficiency of water for stock.

Relief came first in the provinces of the Middle Volga region, where it began to rain between the 20th and 24th of August, but in the greater part of the Black Earth zone the drought continued until the second week in September. The rains were at first light and covered only narrow strips of land, but soon grew heavier, and by the middle of September they extended over a vast area, making it possible to proceed with the preparations for sowing the autumn cereals. In the third week of September moderately warm, cloudy weather prevailed all over the country, and in Northern Caucasus and parts of the northeastern and central provinces the precipitation was above normal; but in the southern provinces and in Poland, the precipitation fell short of the quantity requisite for the fall sowings. About the 20th or 22d of September warm and clear weather again became general and had continued so up to the mailing of the returns that were to serve as a basis for the report here summarized.

Simultaneously with the beginning of the drought occurred a rapid rise in the temperature, the weather becoming very hot and continuing so until near the end of August, except in the northwest, where a notable fall of temperature occurred somewhat earlier; in general, the last few days of August and the first two or three weeks of September were marked by extremely cold weather, morning frosts occurring on August 29 and 30 over extensive regions and injuring not only vegetables but late-sown buckwheat and millet, while in the provinces of the Ural, Lake, and Northern regions oats still on the stem were also damaged.

About the 20th of September a sudden rise occurred in the temperature which soon attained a point considerably above normal in the larger part of the country, though the nights remained quite cool. Clear and warm weather was now quite general till near the end of September.

Speaking broadly, it may be said that during the period under consideration, the meteorological conditions in the greater part of European Russia were extremely unfavorable to agriculture. An abrupt change from moderately warm weather to extreme heat arrested the development of the kernels in the spring cereals, making the quality of the crop very poor in many localities, while as a result of the long drought, the sowing of the winter crops was almost everywhere retarded. Moreover, in the northeastern part of European Russia, the late cereals were badly damaged by the cold before they were ready for cutting, while in some localities garden and field vegetables were killed by morning frosts before the end of August.

Harmful insects were somewhat numerous during the second half of the summer, as they also had been during the preceding period, and in some parts of the country they did considerable damage in fields, gardens, and orchards. In some parts of the Black Earth

zone cereals suffered so badly that they had to be harvested while still green, or even mown for fodder, in order to save a portion of the crop. The damage was particularly heavy in New Russia, Little Russia, the Southwest region, some provinces of the Central Agricultural region, and portions of Northern Caucasus. barley and spring wheat being the grains that suffered most. Field mice did serious injury to crops on the stem, as well as in shock, in many parts of the Central Agricultural, Middle Volga, Ural, and Moscow Manufacturing regions, while in Orenburg, a province of the Lower Volga region, damage was done by the Siberian marmot.

In some parts of the Ural and Lake regions, in Kazan, a province of the Middle Volga region, and in parts of some of the western provinces, the young shoots from the newly sown winter grains were reported to have suffered from the wire worm and other insect enemies.

Through almost the whole of the Black Earth zone the crops were harvested in dry and very hot weather. By the 10th of September there remained in the fields only the root crops and potatoes, all the cereals having been carried off, and in many cases even thrashed without having been exposed to a drop of rain. An exception to this rule was, however, presented in the regions of the Middle and Lower Volga, particularly the latter, where rains during the latter part of August and the early part of September somewhat retarded both the cutting and the hauling of the late spring cereals, damaging both the grain and the straw. Yet, even in these two regions, the completion of the harvest was favored in the latter part of September by the change to warmer and clearer weather, which occurred about the 20th or 22d of that month.

But while the harvesting throughout the greater part of the Black Earth zone was done in dry weather, the prevalence of continued high temperature and strong winds caused considerable loss through the shedding of grain. Moreover, owing to the extreme heat, the crops ripened very rapidly and almost simultaneously, thus making it very difficult to get the harvesting done in time.

Outside of the Black Earth zone the winter grains were, in general, harvested satisfactorily, but the spring crops were less favored, the work being more or less interrupted and retarded by rain. This was particularly the case in the Ural, Northern, and Lake regions. In the Ural region the late sown spring crops were damaged considerably by the wet weather, both before and after cutting, while there was also considerable loss through the shedding of grain, owing to the prevalence of strong winds. Other regions in which the conditions for harvesting were quite unfavorable were Poland, White Russia, Lithuania, and the Baltic region.

Of the winter grains, rye yielded somewhat above and wheat considerably below an average crop. Good yields of both cereals were obtained in the Central Agricultural and Middle Volga regions, where rye is chiefly cultivated, but the results were unsatisfactory in a part of the Empire where wheat is the important crop, namely, in the Southwest region and in Bessarabia, Kherson, and Taurida, three of the provinces of New Russia.

The spring cereals were poor or unsatisfactory in the provinces of Podolia and Kief (Southwest region) and in Bessarabia, Kherson, and Taurida (New Russia), having suffered from prolonged drought in all of these provinces. In the Ural region and in scattered localities through the provinces on the Volga they gave satisfactory yields, this being particularly the case with spring wheat and oats; but, as already stated, the conditions for harvesting them in the Ural region were not favorable.



